Midterm Exam = Answers
October 27, 2004

Answer all questions, on these sheets. There are 71 points, as indicated. Budget your time accordingly.

1. (12 points) Several transactions are described below, each of which may or may not give rise to two entries in the U.S. balance of payments for 2004. In the spaces at the right of each, record these entries, first by inserting the letter “code” from the accompanying table of balance of payments categories, then by writing the US dollar value as a credit or debit. The first one is done for you, as an example. All persons and companies are American, unless otherwise specified. All transactions occur in 2004 unless otherwise specified.

<table>
<thead>
<tr>
<th>Code</th>
<th>Credit</th>
<th>Debit</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td></td>
<td>$50,000</td>
</tr>
<tr>
<td>A</td>
<td>$50,000</td>
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a. Alan Deardorff buys a car for $50,000 directly from its German manufacturer, who deposits the proceeds in a New York bank.

b. Lars Larsson, a Swede, wins a $3,500 prize from the American Express company for writing an essay, and spends it vacationing in the U.S.

c. Microsoft sells 50 copies of its software in Japan for ¥30,000 each and exchanges the proceeds at 100¥/$ with a Japanese musician who has just sold shares of stock in Microsoft.

d. Walmart buys a load of kitchen utensils from China for $70,000, where the manufacturer exchanges the dollars with the Chinese government, which keeps them in reserves.
2. (8 points) The figure at the right shows excess demand for foreign currency, the euro, from the perspective of the United States. Answer the following questions in the spaces provided, and/or by adding to the figure, as indicated.

a. Suppose that there occurs an increase in the prices of US-produced goods that compete with US imports. Show how this will affect the excess demand curve by drawing it in its new position.

b. Assume that the US has a freely floating exchange rate. Based on the new position for the $ED$ curve that you drew in the figure, has this rise in US prices caused the US dollar to appreciate or to depreciate?

Depreciate

c. Does this change in the exchange rate cause the prices of goods imported into the US to rise, to fall, or to remain unchanged?

Rise

d. Suppose that the rise in price of these import-competing goods was 8%, and suppose that these goods constituted exactly half of US output and US consumption. According to the theory of Purchasing Power Parity, by how much and in what direction would the value of the US dollar change? Is this consistent with, or not consistent with, what you found using the above figure?

Depreciate by 4%, since the price level would rise by half of 8% and PPP says the currency should depreciate by the amount that domestic prices have risen relative to foreign prices. This agrees with the result in the figure.

e. Suppose that the US instead pegs its exchange rate at the level $\bar{E}$ shown above. Is the US Central Bank buying or selling foreign currency before the above price change? How does its purchases or sales change as a result of the price change?

It is selling euros, and it must sell more after the price increase.
3. (2 points) The following table lists 4 of the 17 projects that were ranked by the experts of the Copenhagen Consensus. Two of them got project ratings of “very good” from the experts, while two got ratings of “bad.” Put check marks (✓) next to the two that that were rated “very good.”

- [✓] Control of malaria
- [ ] Optimal carbon tax
- [✓] Trade liberalization
- [ ] Guest worker programs for the unskilled

4. (5 points) Write a paragraph describing how wages of skilled and unskilled workers changed in the U.S. starting in the 1980s. Explain at least two possible explanations for these changes and what the evidence is as to the validity and relative importance of these explanations.

*During the 1980s, the wages of skilled workers rose relative to those of unskilled workers. Possible explanations for this change include the following:*

*Trade:* Increased openness of the U.S. economy and/or increased participation in the world economy by developing countries with an abundance of unskilled labor would be expected to put downward pressure on the prices of unskilled-labor intensive goods and thus, through the Stolper-Samuelson Theorem, downward pressure on the wages of unskilled workers both relative to skilled worker wages and absolutely. In fact the U.S. did not become any more open to trade during this period, but developing countries did, so this explanation is likely to be part of the story.

*Labor supply:* If skilled labor became more scare, it would have exactly this effect. In fact however, the fraction of the U.S. labor force with advanced education continued to expand during this period, making this an unlikely explanation.

*Immigration:* An inflow of unskilled migrant workers would expand the supply of unskilled labor and could potentially have this effect. In fact, however, U.S. immigration has not been nearly large enough to account for the observed changes.

*Technology:* Technological progress that favors the employment of skilled workers over unskilled workers would increase the demand for skilled labor relative to unskilled labor, also having this effect. Technology is very hard to measure, but the consensus among economist who have studied this issue is that technological change has probably been the most important cause of the rising ratio of the skilled wage to the unskilled wage.
5. (12 points) In the figures below are drawn production possibility curves for two Ricardian economies, A and B, that in autarky consume (and produce) at the points marked $D_A$ and $D_B$ respectively. They are the only countries in the world, and goods $X$ and $Y$ are the only goods.

![Graphs of production possibility curves for countries A and B.]

a. Assuming that preferences are homothetic and identical, draw the budget lines and consumption choices of aggregate consumers under free trade. Label the new consumption points $D_A$ and $D_B$ and the production points $S_A$ and $S_B$.

b. Suppose that the labor force of Country A is 240, and the labor force of Country B is 24. Which country, if either, has an absolute advantage in producing good $Y$? Which has a comparative advantage in producing good $Y$?

Unit labor requirements are $a_X = 240/12 = 20$ and $a_Y = 240/20 = 12$ in A and $a_X = 24/6 = 4$ and $a_Y = 24/4 = 6$ in B. Thus B has an absolute advantage in producing $Y$, while A has a comparative advantage in producing $Y$ (since A’s relative cost of $Y$ is $12/20 = 0.6$ compared to $6/4 = 1.5$).

c. According to the trading equilibrium you have shown, what has the move from autarky to free trade done to the real wage of labor in each country in units of good $X$? What has it done to the real wage of labor in each country in units of good $Y$? (Increase, decrease, or stay the same. No need to calculate.)

The real wage of labor is unchanged in units of good $X$ in both countries and unchanged also in units of good $Y$ in A. It has risen in units of good $Y$ in country B.
6. (18 points) Address the question of how education affects the well-being of workers by answering the following questions. Throughout you should assume that the world conforms to the Heckscher-Ohlin trade model with two factors, skilled (i.e., educated) and unskilled labor, producing two goods, iPods and flip-flops. Production of both requires the use of both kinds of labor, but iPods use skilled labor intensively compared to flip-flops. Preferences for the two goods are identical and homothetic in all countries. In each part, state your answer in words and also explain or demonstrate your answer using whatever tools are appropriate.

a. (4 points) Suppose that a small country faces fixed prices of the two goods, both of which it produces. If it now educates more of its labor, so that its endowment of skilled labor rises and its endowment of unskilled labor falls, what will happen to the real wages of its skilled and unskilled labor, assuming that it continues to produce both goods?

With fixed prices and diversification, a change in factor endowments does not change factor prices at all (“factor-price insensitivity”). This can be seen in the Lerner diagram, where the endowment point moves northwest, but since it remains inside the diversification cone, the two wages remain at \( w_{U0} \) and \( w_{S0} \).

b. (4 points) How will this country’s outputs of the two goods change as a result of educating more labor, still holding the prices of the goods constant?

Output of iPods increases, while output of flip-flops decreases. This too is seen in the Lerner diagram, using parallel lines to find the factors employed in each industry before and after the change, at \( F_0, F_1, I_0, \) and \( I_1 \).
c. (4 points) Suppose now that the country is not, after all, small, so that the changes in output that you found in part b (together with any associated changes in demand) can cause a change in world prices. How will prices then change?

From the output changes in part b, the relative output of iPods in this country clearly rises. With identical homothetic preferences, even though income of the country presumably rises, it continues to demand the goods in the same proportions as before at the initial prices. Therefore on the world market, the relative demand curve stays the same while the relative supply of iPods compared to flip-flops increases. This causes the equilibrium relative price of iPods to decrease.

\[ \frac{P_I}{P_F} \]

\[ RS_0 \]

\[ RS_1 \]

\[ RD \]

\[ Q_I/Q_F \]

d. (4 points) How will the price change that you found in part c now affect the real wages of skilled and unskilled labor in the country?

Using the Stolper-Samuelson Theorem, this fall in the relative price of iPods, which are skilled-labor intensive, will reduce the real wage of skilled labor and increase the real wage of unskilled labor. This is seen in the Lerner diagram where, holding the price of \( F \) constant, the fall in price of \( I \) shifts the unit value isoquant for \( I \) outward. The intercepts of the new common tangent show immediately that the real wage of unskilled labor has risen, while the real wage of skilled labor has fallen.

\[ S \]

\[ I/w_{S1} \]

\[ I/w_{S0} \]

\[ I=1/p_{I1} \]

\[ I=1/p_{I0} \]

\[ F=1/p_{F0} \]

\[ 1/w_{U1} \]

\[ 1/w_{U0} \]

\[ U \]

e. (2 points) Now, combine your answer to part a with the answer to part d to say, to the extent that you are able, how the real wages of skilled and unskilled labor are affected by educating additional workers in a large trading economy. For each group (skilled workers and unskilled workers), does it gain, lose, or remain unaffected? Or are you unable to say without additional information?

Since the real wages did not change at all in part a, the changes in part d are the whole story. That is, education of additional workers in a country that is large enough to affect world prices causes the real wage of unskilled workers to rise and the real wage of skilled workers to fall.
7. (14 points) Fill in the blanks and/or circle the correct choice (when two or more are offered in brackets [ ] separated by “/”), as appropriate, in the following.


c. The figure at the right shows determination of equilibrium in the monopolistic competition model. In this model:
   - an increase in market size shifts the [ PP / CC ] curve [ up / down ];
   - an increase in sensitivity of demand to price shifts the [ PP / CC ] curve [ up / down ]; and
   - an increase in firm fixed costs shifts the [ PP / CC ] curve [ up / down ].

d. Suppose that a single domestic firm is selling both on its home market, where it is protected by a tariff, and on the world market, where it takes the world price as given. Such a firm will be defined as dumping because it is exporting for a price that is [ above / below ] the price that it charges in its home market. If the world price now rises, this firm will [ increase / decrease / leave unchanged ] the price it charges on its domestic market.